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LTP Learning Technologies Project Bulletin

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In the Spotlight

LDAPS Continues Strong Partnership with LEGO Dacta, National Instruments

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The LDAPS project continues its strong industry partnership with LEGO Dacta and National Instruments. ROBOLAB 2.0, the educational software used to program the RCX, the LEGO programmable brick, will be released this fall. This new version of the software will allow students to remotely sense and control each other's projects over the Internet, share and publish data to the Web, and graph and analyze data gathered from LEGO sensors.

ROBOLAB will be used at the LEGOLAND theme parks, as well as in FIRST LEGO LEAGUE, the middle-school version of the high-school robotics competition sponsored by the U.S. First organization. ROBOLAB was used by over 1,000 schools during the past school year, the first year it was available.

ROBOLAB was also chosen by the science coalition to be demonstrated in a lobbying campaign for Congress on September 22. Democrats and Republicans battled it out at the demonstration table in a contest to program LEGO robots to walk and (hopefully) not fall off the table.

Members of the LDAPS project are also planning to unveil some of the amazing capabilities of ROBOLAB 2.0 at Mindfest, a robotics event held at the MIT Media Lab at the end of October.

Several grants have been awarded from NASA, the National Science Foundation (NSF), and the Noyce Foundation to the Center for Engineering Educational Outreach (CEEO) and the College of Engineering to continue successful teaching models. The CEEO will be involved in developing new courses for the Tufts mechanical engineering department that involve LEGO bricks and sensors, adult-learning modules that can be downloaded from the World Wide Web, LEGO rovers that can be remotely piloted and gather data for students over the Web, and development of engineering curriculum ideas for elementary schools (by supporting graduate students in mechanical engineering to work on thesis projects in local schools.)

News Bytes

Guide to Math & Science Reform Features Learning Technologies Channel

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Just a Click Away from the Classroom is now online. The article can be reached directly at **http://www.learner.org/theguide/experts.html**. The section on the Learning Technologies Channel (LTC) is toward the latter part of the article and under the heading "Blastoff from the Classroom." The quote is not entirely accurate, but the essence of LTC is there.

Light, Waves, and Interference Teacher's Workshop Set for October 29

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NASA Quest's Learning Technologies Channel (LTC) and Jet Propulsion Laboratories present *Light, Waves, and Interference*, a teacher's workshop, as part of *Live from JPL* on October 29 from 8:30 a.m. - 3:30 p.m., Pacific. The event will take place online at **http://quest.arc.nasa.gov/ltc/special/interf.html**.

The workshop explores the fascinating world of light, waves, and interference. Discover why hummingbirds shimmer in such spectacular colors, why we see colors on a puddle of rainwater, and what surfers have in common with cutting-edge astronomers looking for habitable planets around distant stars. See for yourself how we are surrounded by waves that interact in surprising ways. Engage in hands-on classroom demonstrations and help us make them even more fun.

This bulletin will also be available in Adobe Acrobat format on the Developers' Workshop Web site at: **http://developers.ivv.nasa.gov/collab/pubs/bulletin/**

In the Spotlight

Set Sail in Cyberspace! Students Can Chat Online with Boat Designer, Sailor

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Live from the America's Cup village in Auckland, New Zealand, students will be able to chat with boat designer and sailor Ian "Fresh" Burns of the Hawaiian yacht *Abracadabra 2000*.

Ian has been involved in three previous America's Cup campaigns. His background in engineering, computer modeling, and composite structures, combined with long-term practical experience, has established him as one of the world's finest America's Cup engineers.

"We're thrilled that Ian Burns of *Abracadabra 2000* will lead off our K-8 Aeronautics Internet Textbook student Webchats this year. Ian is the most knowledgeable person I know in sail aerodynamics. And he is very familiar with the space age technology and computer modeling first developed at NASA, used in the aerospace industry, and now the standard for competitive sailboat design," said the project's principal investigator, Dr. Jani Macari Pallis.

Boat design is critical to a team's ability to win, and each team invests heavily in the research and development projects which lead to the design that maximizes boat performance. Designers conducted extensive tank and wind tunnel tests for weather conditions in New Zealand. The America's Cup-class yachts are built from technologically advanced aerospace carbon fiber materials known for their great strength and light weight, but which require precise construction techniques mastered by only a few boat builders in the world.

"We're very fortunate Ian is taking time out between races to talk with the students. We've scheduled our series of Webchats so students from Hawaii to the east coast will have an opportunity to ask Ian questions about modern boat design," said Pallis. "I know people have a lot of questions about these yachts. The *Abracadabra 2000* team has two boats named *Abracadabra 2000*. Why do they have two boats? Why do boats have different hulls (frame or body of a ship)? Which boat will they race? There are different types of sails: mainsail, jibs, spinnakers—why? How are they different aerodynamically?"

The America's Cup is the oldest sport trophy in the world. The first race was held in 1851. The *Abracadabra 2000* team is one of 11 international challengers who will compete against one another for the right to race against the current America's Cup defender, Team New Zealand.

Both *Abracadabra 2000* yachts' hulls have been painted by internationally renowned environmental marine artist Wyland. Graphics featuring life-sized whales, dolphins, and a multitude of sea creatures indigenous to the waters of Hawaii and New Zealand have drawn widespread attention on and off the water.

This year, athletes and equipment designers, like Olympic medalist and fastest man on skis (150+ MPH) Jeff Hamilton, the Gaastra Sails world-class professional wind surfing and design group ("The Team"), and three-time Olympic sailor and designer Mark Reynolds (hoping for a fourth Olympics and a third medal in 2000) have all agreed to share their knowledge of aerodynamics in sports with students through NASA LTP's K-8 Aeronautics Internet Textbook.

The *Set Sail in Cyberspace!* Webchat will be on Thursday, November 4, from 11 a.m.–12 p.m. (PST). Participants will enter the chat room from the K-8 Aeronautics Internet Textbook (**http://wings.ucdavis.edu**) or NASA's Quest Web site (**http://quest.arc.nasa.gov/common/events**).

NASA Quest Broadcasts Live, Interactive Events for Educators and Children

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Live, interactive science programs in which students in classrooms can watch live video, listen to an audio program, and interact with real-time events have been scheduled by NASA Quest's Learning Technologies Channel (LTC). Join in events about the Sun, shuttle landings and launches, and the world of light, waves, and interference.

In October, NASA Quest and Stanford SOLAR Center teamed up to produce a series of Webcasts for the 1999-2000 school year--*All About the Sun*. Guest scientists, physicians, and educators are featured.

"The series is geared toward specific grade levels, providing a separate and complete Webcast each month for grades 2-4, 5-8, and 9-12. Each Webcast is designed to engage the classroom in solar science activities, including lesson plans and curricula developed by NASA," said Kate Weisberg, LTC project manager.

At least one of these events will be broadcast live from a classroom, and electronic field trips will take students to Stanford's Wilcox Observatory in California in April and to the Kitt Peak Observatory in Tucson, Arizona, in May.

Also beginning in October is *The Space Shuttle Countdown: Landing to Launch* series. Live from the Kennedy Space Center, these Webcasts will follow the processing of the shuttle from landing to launch. The Webcasts will offer tours of the space center not typically open to the public, with insights from the people who work there.

"Students experience a real connection to NASA experts as they watch their questions being answered in living color, broadcast live to their desktops and to a worldwide audience," said Linda Conrad of NASA Quest.

NASA Quest and the Jet Propulsion Laboratory present *Light, Waves, and Interference*, an online, interactive teacher's

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Nothin' but Net

Designing and Choosing Buttons for the Web

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Hey, look at this button on the Web! Web designers like it when people are impressed by their designs, whether it's the whole layout of a Web site or something as simple as a button on one of the pages. It lets the designers know that they're doing something right.

One of the keys to making a good Web layout is the design and style of the buttons used. There are several ways to make buttons and several different ways to display them. The question to ask when designing a Web page is, "What types of links are going to be on the page, do they need to be linked text or a linked button, and which will work best?"

Part of that question has a simple answer. If the link is in a paragraph, it only makes sense to use linked text. But if the link is outside a paragraph, should you use linked text or a button? That will depend on the layout of the page.

If you've decided that the page should have buttons, you have to decide which of the several different types of buttons to use. Buttons can be any images that are linked, not just the images that are designed to look like the typical Web button. Buttons can have many different attributes on today's Internet. They can be animated GIFs, transparent GIFs, Javascript rollovers, regular JPEGs, regular GIFs, and even PNG images.

Deciding which type of button to use isn't always easy. A Javascript rollover is one of the more interesting ways to get a viewer's attention. Javascript rollovers normally use two graphics—one graphic is visible when the page loads and another graphic loads in the same spot when the cursor is moved over the first graphic. The second graphic loads when the cursor is moved away from the top of the first graphic. This produces a rollover effect. Since the graphic changes, it gets the viewer's attention more easily. A Javascript rollover can use JPEGs, GIFs, transparent GIFs, and even animated GIFs. One the most interesting things to do with a rollover is to use a regular JPEG or GIF as the first image, then use an animated GIF for the mouse-over image.

Animated GIFs also make good buttons because they have movement, which catches the viewer's eye. The only problem with animated GIFs is that they can be distracting. If the animation is small and out of the main viewing area (such as off to one side) it can be very effective at drawing attention to the side of the page.

Another way to create buttons is to use an image map. Create a large image and decide which parts of the image will be linked to what. With an image map you can make only selected areas of an image linked. An alternative to image mapping is cutting the image into pieces and putting it together using a table and linking the pieces that need to be linked.

Whichever type of button you choose for your Web page (whether it's a Javascript rollover button, an animated GIF, or an image map), always remember to use the BORDER=0 tags inside of the <IMG SRC> tag. This will remove any unwanted borders around the images. Choose some buttons, play around, and enjoy. The only limitation is your imagination.

Highlights & Happenings

Passport to Knowledge: *Live From the Storm*, Other Events

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Passport to Knowledge has begun instructional materials development and principal videography for its latest interactive learning adventure, *Live From the Storm*. (Yes, plans for the module preceded Hurricane Floyd!) Meanwhile, *Live From the Sun* continues with an updated program designed to illuminate Solar Max.

In the same spirit of connecting students and teachers directly to researchers on location on scientific frontiers which previously took PTK participants to the South Pole, the heart of the Amazon rainforest, and, virtually, to Mars and the Sun, *Live From the Storm* will take participants aboard the National Oceanic and Atmospheric Administration's (NOAA) research aircraft. Viewers will fly through Hurricane Dennis and into the very eye of the storm, and go behind the scenes at the National Hurricane Center–the place where all those watches and warnings originate during hurricane season. Viewers will also see scenes from NASA's recent expedition to Kwajelein in the Pacific, designed to provide ground truth calibration for the ongoing Tropical Rainfall Measuring Mission (TRMM).

Next spring the team will be on location at the National Severe Storms Laboratory in Norman, Oklahoma, to see how tornadoes are studied. The two programs will also explore the nature of winter storms, the reasons for droughts, the nature of "fire weather," and much more. No matter where they live, *Live From the Storm* (part of the ongoing *Passport to Weather and Climate* module) will bring teachers and students the latest research while providing state-of-the-art multimedia materials linking daily headlines to national science standards. NOAA's

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work (along with results from NASA's network of remote sensing satellites) is a perfect example of how scientific understanding and research can lead to better and more timely forecasts.

UPCOMING BROADCASTS

Tuesday, November 16, 1-2 p.m., Eastern
Live From the Sun 2000: To the Max
Topic: PTK's *Passport to the Sun 2000* module continues with a new and original broadcast.

The new one-hour broadcast will visit NASA's Marshall Space Flight Center, preview the final months before launch of the IMAGE spacecraft (January 2000), and go on location to the mighty solar telescopes in Hawaii and California. And since solar science is an especially international enterprise, look for reports from around the world–specifically from sites that are part of the GONG project. This year's participants can expect more input from researchers at NASA Goddard and the National Science Foundation's (NSF) National Solar Observatory at Kitt Peak. Key science concepts such as light and optics, magnetism, and the electromagnetic spectrum will be brought to life in dramatic real-world locations. *Live From the Sun 2000* is supported, in part, by NASA's Office of Space Science and the NASA Education Division.

A teacher's guide and multimedia kit are available. For more information, visit the *Live From the Sun 2000* Web site at **http://passporttoknowledge.com/sun**.

Tuesday, March 7, 2000, 1 p.m., Eastern
Live From the Storm, Program 1
Topic: Who, What, When, Where, and Why of Weather

Tuesday, April 11, 2000, 1 p.m., Eastern
Live From the Storm, Program 2
Topic: Research to the Rescue!

In both programs, students will meet the men and women who brave (literally) the elements in order to better understand weather and climate and to make accurate and life-saving predictions. There will be dynamic original graphics relating everyday phenomena to the key concepts all teachers have to teach. There will be engaging and current material for the Earth, physical, and space sciences, as well as PTK's customary interdisciplinary connections to math, social studies, language arts, technology, and more.

The teacher's guide, multimedia kit, and online resources will be an integral part of the modules, along with the broadcasts. The guide and kit will be available in January 2000.

An introductory Web page has been set up for this project. The full Web site will debut in January 2000 at **http://passporttoknowledge.com/ptk_storm.html**.

Passport to Weather and Climate is principally supported by NOAA. Additional support comes from NASA's Education Division and the Earth Science Enterprise.

Quest's Mars Millennium Project Webcast a Resounding Success

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The NASA Quest Mars Millennium Webcast was a success because of the gracious donation of so many people's time and extra effort. Congratulations to everyone who participated.

The archive is up and looks good, considering the delivery medium. It is online at **http://quest.arc.nasa.gov/ltc/ram/mars0928-v.ram**.

Chris McKay, Kelly Snook, Bob Anderson, and David Seidel—the scientific talent—did an outstanding job interacting with the kids. The four fifth graders seated with them onstage became very comfortable and more animated with each interaction. There was no script and all the interaction was natural and spontaneous. The scientists used analogies which were appropriate for the age group (mostly fifth grade) and asked compelling and challenging questions, eliciting a number of insightful and sometimes hilarious responses. It will be an experience these children will never forget and their parents and teachers were honored and grateful for this opportunity. LTC will send each of the participating students a note on NASA stationery describing their participation and listing the names of the NASA scientists who were there with them.

David Seidel and Bob Anderson showed their true dedication to NASA science education by traveling to Ames on short notice to contribute their time and expertise to this event.

Linda Conrad and Sandy Dueck provided the kind of support that makes this type of event possible. Linda's coordination of 128 second- through fifth-grade students, their teachers, and parents was nothing short of amazing. Linda, Bob, Chris, and David went out to the schools the day before the Webcast to talk with the students and teachers about the event and tell them what to expect and how to participate effectively. All participants arrived at NASA and were briefed and in their seats by 9:30 a.m. Linda then hosted the event and provided the stage presence for NASA Quest, taking questions from the online chat room for the panel.

Sandy Dueck and John Bluck were a force in getting the publicity wheels turning with press releases and multi-site links. Survey responses are just beginning to come in and many have made mention of Sandy and her attentiveness and technical support in the chat room.

Eric James and John Schultz provided their usual impeccable and professional audiovisual production support and made it all look easy. Arlene Dondoyano did an excellent job controlling the encoding and distribution of the broadcast.

Some statistics for the live event:
Classroom Participation:
128 students from 3 Bay Area schools
Chat Room Registration:
101 registered (The room was limited to 100 and was full in the first two weeks of registration.)
Distribution (number of people watching the Webcast at a given time):
213 simultaneous streams Quest (Ames)
2,000 simultaneous streams (Live on the Net)

In the Spotlight **(cont.)**

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workshop to be held on October 29. The fascinating world of light, waves, and interference will be explored. Discover why hummingbirds shimmer in such spectacular colors, why we see colors on a puddle of rainwater, and what surfers have in common with cutting-edge astronomers looking for habitable planets around distant stars. See for yourself how we are surrounded by waves that interact in surprising ways. Engage in hands-on demonstrations and help us make them even more fun.

NASA Quest Webcasts provide outstanding opportunities for educators from all over the world to bring space science content to the classroom through the technology of the Internet. These exciting Webcasts are just some of the many Internet offerings from NASA's Quest project at **http://quest.arc.nasa.gov**. The online, interactive projects connect students with NASA employees and are designed to inspire young people to pursue careers in technology.

For the 1999-2000 Quest Webcast programming schedule, visit the solar series at **http://quest.arc.nasa.gov/ltc/soho/index2.html**; the shuttle series at **http://quest.arc.nasa.gov/space/events/ksc99/**; and the light, waves, and interference workshop at **http://quest.arc.nasa.gov/ltc/special/interf.html**.

If you would like to be on the LTP Bulletin mailing list, please send e-mail to Scott Gillespie at: sgillespie@rspac.ivv.nasa.gov, or write to: BDM/RSPAC, 100 University Drive, Fairmont, WV 26554. Phone: (304) 367-8324, fax: (304) 367-8211.

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